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POLYPORACEAE OF PENNSYLVANIA

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SCHOOL OF AGRICULTURE AND EXPERIMENT STATION
STATE COLLEGE, PENNSYLVANIA

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THE POLYPORACEAE OF PENNSYLVANIA

II. The Genera Cyclomyces, Daedalea, Favolus, Fomes, Lenzites, and Trametes [1]

L. O. OVERHOLTS

GENUS CYCLOMYCES Kunze

THE GENUS *Cyclomyces* is characterized by a concentrically lamellated hymenial region at the maturity of the sporophore. In young specimens tubes with large irregular pores are present but, as the sporophore develops, these pores coalesce tangentially to form a series of concentric coriaceous gills. Our single species has a brown stipitate sporophore, and is rarely collected. Only three or four collections are known from the state.

Cyclomyces Greenei Berk. A *centrally stipitate* species, *rusty-brown* throughout, 3-15 cm. diameter; hymenial region of *concentric coriaceous lamellae;* spores elongate, nearly hyaline to pale brownish, 9-15 x 4.5-6 u; cystidia none. On the ground in woods. Rare.

GENUS DAEDALEA (Pers.) Fries

While based primarily on the daedaloid hymenial configuration, the species intergrade into *Trametes* and into *Lenzites*. Specimens that do not key out readily here should be tried under those genera.

Key to the Species

1. Pileus surface conspicuously hairy or hirsute; hymenial surface never gilled, but often toothed at maturity.....*D. unicolor*
   Pileus surface inconspicuously pubescent or glabrous.....2
2. Pores or interspaces (i. e. between the gills) 1 mm. or more broad; producing a brown carbonizing decay of the wood; usually limited to oak and chestnut .....*D. quercina*
   Pores or interspaces less than 1 mm. broad; producing a white rot of the wood; on various substrata 3
3. Sporophore white or yellowish throughout, the pileus smooth and azonate .....*D. ambigua*
   Sporophore more or less wood-color or avellaneous, especially on the lower surface, the pileus usually radiate rugose and zonate.... .....*D. confragosa*

[1] Publication authorized May 16, 1935.
Paper No. I of this series was published as Technical Bulletin No. 298 of the Pennsylvania Agricultural Experiment Station, September, 1933. It should be consulted for a key to the genera and for certain miscellaneous information necessary in operating a key.

The following species in other genera may show, at times or more or less constantly, a daedaloid hymenium; they should be compared if the specimen at hand seems not to fit into any of those keyed out: *Polyporus fragilis, P. obtusus, Trametes heteromorpha, T. variiformis,* and *Fomes Pini.*

Resume' of Species

Daedalea ambigua Berk. A medium-sized or *rather large, nearly pure white species* with *glabrous* and usually *azonate* corky pileus and pores only *mildly daedaloid* or in rare cases only angular. Context white. Produces a white rot of the sapwood of various species of deciduous trees. May occur occasionally in the southern tier of counties.

Daedalea confragosa (Bolt.) Fries. A small or medium-sized leathery to corky species, usually *pallid-brown* or *wood-color* throughout, the pileus surface *glabrous, zonate* and *radially ridged.* Pore surface varying from poroid to entirely lamellate, in one form becoming pinkish where bruised. On dead wood of many species of deciduous trees but especially on willow, birch and oak. Common. Produces a white rot of the sapwood. (Plate I and II).

Daedalea quercina (L.) Fries. A small to rather large *perennial,* corky, glabrous species with large *irregular* and *sinuous pores 1 mm. or more broad.* Produces a brown checked heartrot in living trees and in stumps and logs. Usually on oak and chestnut. Common. See Plate I, Fig. 5 of Bulletin No. 298.

Daedalea unicolor (Bull.) Fries. A *small, thin,* coriaceous species with *densely hirsute* and multizonate pileus and pore surface often becoming toothed. On dead wood of deciduous trees. Common.

GENUS FAVOLUS (Beauv.) emend. Fries

But a single species is known to occur within the state. *Favolus canadensis* Kl. a small substipitate species, the pileus surface reddish-yellow to brick-red and innately fibrillose-scaly, whitening and becoming glabrous with age. Pores usually 1 mm. or more in diameter and somewhat radially arranged outward from the stem, but in a form with smaller pores this arrangement is less distinctive. Stem eccentric or lateral, usually poorly developed. Common on dead wood of deciduous trees, especially hickory. Compare *Polyporus arcularius* with central and better developed stem, and *P. fagicolus* of softer consistency and better developed stem. See Plate I, Fig. 10 of Bull. No. 298.

Another species, *F. rhipidium* Berk., will probably eventually be collected in the state. It is a very small species with pileus usually only about 1 cm. diameter or less, and with minute pores and a slender stem.

GENUS LENZITES Fries

Key to the Species

1. Context and gill surface white in fresh plants, sometimes yellowish on drying ..... *L. betulina*
   Context and gill surface some shade of brown or rusty 2

2. Hymenial region usually gilled, the interspaces 0.5-1 mm. broad; pileus rusty-brown or tobacco-brown, with an orange margin when fresh; usually on wood of coniferous trees ..... *L. saepiaria*
   Hymenial region usually more poroid than gilled, the pores 2 to 3 per mm.; pileus cinnamon brown; usually on wood of deciduous trees ..... *L. trabea*

Resumé of Species

Lenzites betulina (L.) Fries. A medium-sized, sessile, leathery species with multizonate and often multicolored hirsute or tomentose pileus, *white context* and *gills,* and with cylindric, hyaline spores, 4-6 x 1.5-2.5 u. Very common on logs and stumps of deciduous trees in all parts of the state. Produces a white rot of the sapwood. See Plate I, Fig. 4 of Bull. No. 298.

Lenzites saepiaria (Wulf.) Fr. A small species, *rusty-brown* or *darker throughout* except for an *orange-red margin* in young growing specimens, leathery, hirsute-tomentose, and with a *few zones,* the hymenium usually *completely gilled* with the interspaces *1 mm. or more wide.* Spores cylindric, hyaline, 6-10 x 3-4 u. Common on dead wood (especially the smaller branches) of coniferous trees; occasional on hardwood species. Produces a *brown carbonizing* saprot or heartrot.

Lenzites trabea (Pers.) Fries. A small species of *cinnamon brown or umber* coloration throughout, leathery, finely tomentose to *glabrous* above, azonate or with a few zones. Hymenium never *entirely gilled, usually with elongated pores averaging 2 to 3 per mm.* in transverse direction. Spores cylindric, hyaline, 7.5-10 x 2.5-3.5 u. On dead wood, usually of deciduous trees, occasionally on conifers. Common.

In addition to the three species here described one must mention the lamellate condition of *Polyporus abietinus* and of *Daedalea confragosa,* and more rarely of *D. quercina.*

GENUS FOMES Gill.

The genus *Fomes* includes all of the sessile pileate species of *Polyporaceae* that are truly perennial, developing layers of new tubes or continuing the downward development of the old tubes year after year. A few perennial species in other genera, such as *Daedalea quercina,* are not referred to this genus because of obvious characters that ally them to species of other genera. Some difficulties arise at times in recognizing a one year old first sporophore as belonging to *Fomes.* No species is more constantly likely to be misreferred than the common *Fomes con-*

natus on maple. Certain other species like *F. conchatus, F. tenuis, F. scutellatus, F. ohiense,* and others never develop the hard woody sporophores that one usually associates with the genus *Fomes* and will erroneously be sought in *Polyporus* and perhaps in *Trametes.*

Key to the Species

1. Context white to pallid, wood-brown, pale brown, pinkish or reddish; spores always hyaline; setae always absent. (SECTION LEUCO-FOMES) 2
   Context rusty-brown or darker; spores hyaline or brown; setae sometimes present. (SECTION FUSCO-FOMES) 10

2. Sporophore small, usually less than 2 cm. long and broad, shell-shaped 3
   Sporophore usually larger 4

3. Growing only on dead alder; spores 8-9 x 2.5-3.5 u; context hyphae considerably branched ..... *F. scutellatus*
   Never on alder; usually on beech or locust; spores 9-12 x 6-7 u; context hyphae simple or nearly so ..... *F. ohiensis*

4. Growing only on living red cedar; context more or less orange ..... *F. juniperinus*
   Growing only on living ash; context slightly pinkish to wood-brown 5
   Growing on other hosts or substrata 6

5. Pores minute, averaging 4 to 6 per mm.; pileus not becoming rimose ..... *F. fraxineus*
   Pores larger, averaging 2 to 3 per mm.; pileus blackish and rimose with age ..... *F. fraxinophilus*

6. Context and often also the pore surface with pinkish or rosy hues; nearly always on wood of conifers 7
   Context and pore surface never at all rosy; often on hardwoods .. 8

7. Context silvery-pinkish; spores elongate-ellipsoid, 5-7 x 2.5-3.5 u ..... *F. roseus*
   Context pinkish-cinnamon; spores slightly curved, cylindric, 5-7 x 1.5-2 u ..... *F. subroseus*

8. Growing on living maples; rarely on black gum; context hyphae with cross walls ..... *F. connatus*
   Growing on other hosts or substrata; context hyphae without cross walls 9

9. Sporophore large, usually 7 cm. or more broad and 2 cm. or more thick; pileus often with a red sticky varnish ..... *F. pinicola*
   Sporophore smaller and thinner, never with a red varnish *F. annosus*

10. Growing only on living black locust; spores brown; setae none ..... *F. rimosus*
Growing only at the base of living gooseberries and currants; spores hyaline or nearly so; setae present ..... *F. Ribis*
Growing only on living *Prunus* (usually wild plum); spores hyaline; setae present ..... *F. fulvus*
Growing only on living ash; spores hyaline, 6-9 x 5-6 u; setae none ..... *F. fraxinophilus*
Growing on other hosts or substrata, often nonliving 11

11. Setae present in sections of pore tissue 12
Setae absent 18

12. Pileus thick (2 cm. or more) 13
Pileus thin (1 cm. or less) 15

13. Growing only on wood of coniferous trees; setae as much as 10-15 u in diameter ..... *F. Pini*
Growing only on hardwoods; setae 4-9 u diameter 14

14. Saprophytic on dead wood of various kinds; spores hyaline ..... See *Polyporous gilvus*
Growing only on oaks, usually on living trees; spores brown ..... *F. Everhartii*
Growing on other living hosts; spores hyaline ..... *F. igniarius*

15. Setae mostly more than 10 u diameter ..... *F. Pini var. Abietis*
Setae not more than 10 u diameter 16

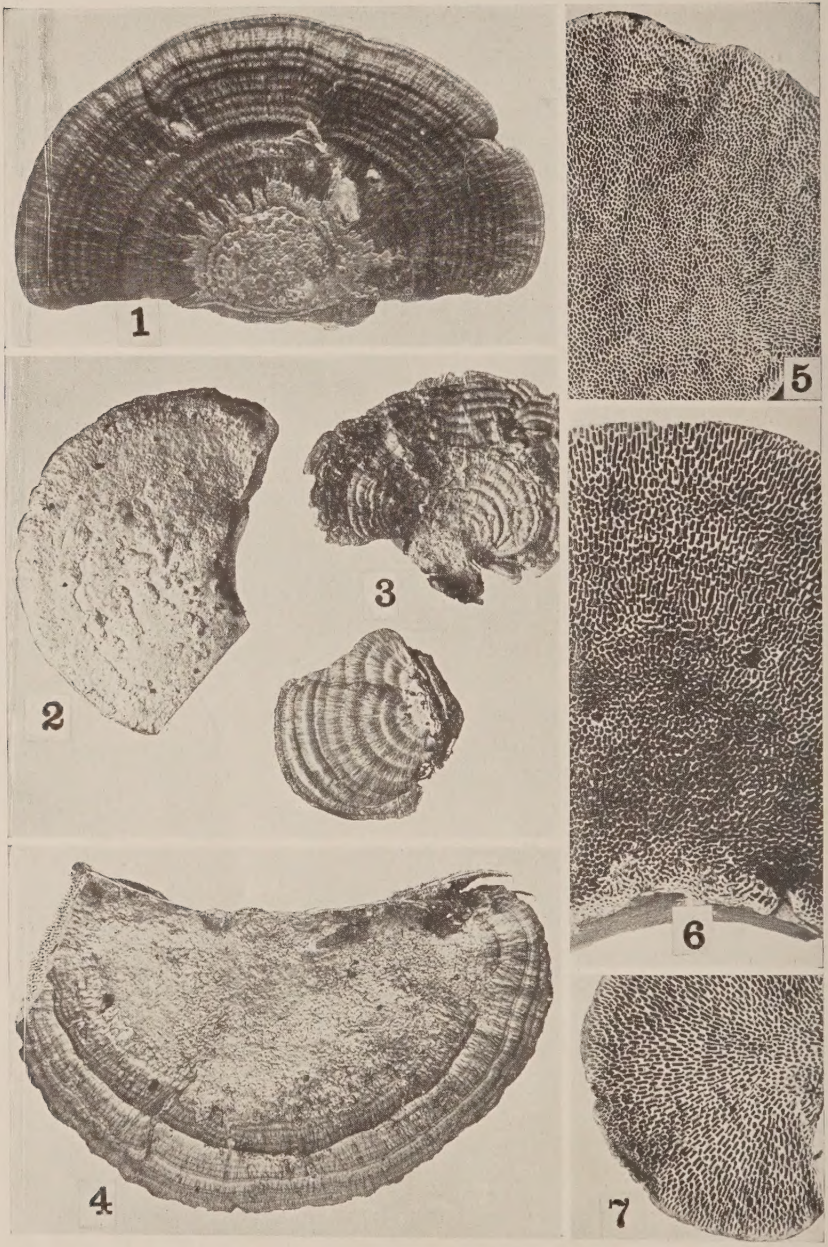
16. Setae projecting conspicuously (usually 30 u or more) beyond the basidial layer; spore cylindric, 5-7 x 1.5-2 u; pores 2 to 4 per mm. ..... *F. tenuis*
Setae not projecting so conspicuously; spore globose or subglobose; pores 5 to 7 per mm. 17

17. Pileus surface furrowed and distinctly tomentose except perhaps in extreme age ..... *F. conchatus*
Pileus surface not furrowed, glabrous .. *F. igniarius var. laevigatus*

18. Pileus surface with a thin crust that is easily indented by the thumb nail; not truly perennial but reviving ..... *F. lobatus*
Pileus surface hard and woody or horny 19

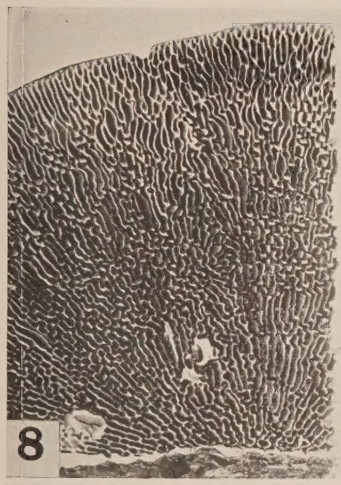
19. Tubes not showing distinct annual layers after the first year ..... *F. fomentarius*
Tubes in very distinct annual layers after the first year (Plate I, Fig. 2, Bull. No. 298) 20

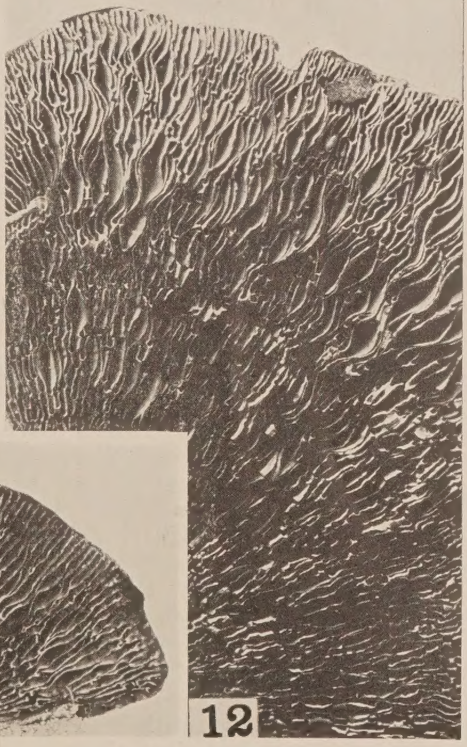
20. Pileus surface with a hard horny crust under which the context is of softer consistency; spores ovoid, pale brown, apparently echinulate or punctate ..... *F. applanatus*
Pileus surface hard but not with an underlying softer context; spores globose, smooth, hyaline ..... *F. robustus*



EXPLANATION OF PLATES I AND II

Variations in *Daedalea confragosa*.—Figs. 1-4, upper surface views. 1, strongly zonate and radiate-ribbed with slight overgrowth at base of pileus; 2, azonate and un-ribbed due to complete overgrowth of superficial hyphae; 3, two small specimens unusually strongly zoned; 4, more usual appearance of specimens with superficial hyphal overgrowth on basal half and with zonate and ribbed marginal area; specimen probably two years old; Figs. 5-12, lower surface views. 5, strictly poroid lower





surface; 6, poroid-daedaloid surface; 7, daedaloid surface; 8, strongly daedaloid surface; 9 nearly lenzitoid surface; 10, entirely lenzitoid surface; 11 combination of poroid and lenzitoid surface; 12, entirely lenzitoid surface.

Resumé of Species

SECTION I. LEUCO-FOMES

(Context light colored. Setae none.)

Fomes annosus (Fries) Cooke. A small species with a sporophore that is *usually mostly resupinate* or with a *narrowly reflexed* pileus, brown on the upper surface, leathery, glabrous, with a *thin black crust* at maturity. Context white. Pores 2 to 4 per mm. Spores subglobose, hyaline, 3.5-5 x 3-4 u. Hyphae not septate, 2.5-5 u. Uncommon and only in the mountainous sections, usually on wood of coniferous trees; occasionally on hardwoods. Compare *Trametes serialis*.

Fomes connatus (Weinm.) Gill. A small or medium-sized white species, *rather soft for the genus*, with slightly tomentose pileus that frequently becomes *covered with moss* at the base, white context, and *tubes in distinct strata* in old sporophores. Pores often glistening yellowish on drying, 4 to 5 per mm. Spores subglobose, hyaline, 3-5 u. Cystidia as heavily capitate-incrusted tips of hyphae likely to be passed by as crystals. Hyphae 3-5 u, *with cross walls*. Common on *scarred bases of living maple*. Rare on other hardwood hosts. Compare *Polyporus albellus* and allies.

Fomes fraxineus (Bull.) Cooke. A medium-sized to rather large leathery or corky species with pileus nearly glabrous, with *more or less sordid-red stains*, and a *slight crust;* context somewhat *flesh-color* or *pinkish brown*. Tubes not definitely stratified. Pores 4 to 6 per mm. Spores 6-7 x 5-6 u. Cystidia none. Hyphae 5-10 u, without septa. Rare, *at the bases* of living *Fraxinus*. *Polyporus induratus* Lloyd is a synonym.

Fomes fraxinophilus Peck. A *rather large species* with *hard* and *woody* pilei, the glabrous surface *soon black and considerably cracked, not incrusted*, the rounded *margin usually remaining white*. Context wood-color to *rather distinctly brown*. Tubes indistinctly stratified, the pores *2 to 3 per mm*. Spores ovoid with a truncate apex, hyaline, 6-9 x 5-6 u. Cystidia none. Hyphae 2.5-5 u, non-septate. On the *median* or *upper part* of the trunks of living *Fraxinus*. Not common in Pennsylvania and rare in the mountainous regions.

Fomes ohiensis Berk. A small species, *rarely over 2.5 cm. long or broad*, and less than 0.5 cm. thick, conchiform or hoof-shaped, the pileus *blackish after the first year*, narrowly furrowed, the *margin remaining white*. Context white or pallid. Pore surface white, the pores 3 to 5 per mm. Spores *ovoid* with *truncate apex*, hyaline, 9-12 x 6-7 u. Cystidia none. Hyphae simple, non-septate. 2.5-4 u. On dead wood of deciduous trees, especially beech and black locust. Rare, though may be expected to be more common in the western end of the state. Compare *F. scutellatus*.

Fomes pinicola (Sw.) Cooke. A *large species*, often 20-30 cm. or more long and broad and 2.5 cm. or more thick, hard, corky, the *pileus furrowed* in age, *glabrous*, often wholly or partly covered with a *red resinous varnish* but this usually lacking in the hardwood form of the species.

Context pallid or in growing specimens *yellow where exposed.* Tubes distinctly stratified in old specimens, the mouths averaging 3 to 5 per mm. Spores broadly ovoid, hyaline, 5-7 x 4-5 u. Cystidia none. Hyphae 4-9 u, non-septate. Common in the mountainous regions of the state on dead wood of coniferous trees and often on certain hardwoods such as birch and aspen.

Fomes roseus (Alb. & Schw.) Cooke. A small species, corky to woody, usually *brownish-pink* on the margin and gray to blackish behind, soon glabrous, *furrowed, context silvery-pink.* Pore surface *pinkish-brown* to dirty brown, the pores averaging 3 to 5 per mm. Spores elongate-ellipsoid, hyaline, 5-7 x 2.5-3.5 u. Cystidia none. Hyphae 2.5-5 u, non-septate. Usually on wood of *coniferous* trees; occasionally on hardwoods. Rare. Compare *F. subroseus.*

Fomes scutellatus (Schw.) Cooke. A *very small* species usually less than 1 cm. long and broad, soon *blackish* above except for the white margin, glabrous. Context wood-color. Tubes not in distinct layers, the mouths 4 to 5 per mm. Spores cylindric, hyaline, 8-9 x 2.5-3.5 u. Cystidia none. Hyphae branched, 2-3 u, non-septate. Common on dead branches of alder, along mountain streams; rare on other hosts. Compare *F. ohiensis.*

Fomes subroseus (Weir) comb. nov. A small species similar to *F. roseus* but typically *thinner* and less furrowed, reviving for only two or three years and often annual. The same *pinkish hues* predominating in growing plants, becoming sordid with age, the context rosy pink to pinkish brown or in old weathered specimens sordid. Spores *narrow-cylindric,* hyaline, *slightly* curved, 4-7 x 1-2 u. Cystidia none. Hyphae 2.5-5 u, non-septate. Rather common in the mountainous regions of the state, usually on dead wood or structural timbers of coniferous species. Rare on hardwoods. Compare *F. roseus.* This is *Trametes carnea* Aut. Am.

Fomes juniperinus (Schrenk) Sacc. and Syd. A medium-sized ungulate species easily recognized by the *yellowish-orange* color of young plants, becoming blackish and *very rimose except on the margin,* the *red-orange context,* and the rather distinctly stratified tubes whose mouths are yellowish or brownish and average *2 to 3 per mm.* Spores almost hyaline to somewhat colored, 6-9 x 4.5-7 u. Cystidia none. Hyphae 2.5-4 u, nonseptate. All parts *red then black with KOH.* A single collection on living *Juniperus,* (the only host) was made near Scranton in 1912.

SECTION II. FUSCO-FOMES

(Context colored. Setae present in some.)

Fomes applanatus (Pers.) Wallr. A medium-sized to *very large* species with furrowed, applanate pileus covered by a *hard horny gray to brown crust* under which the brown context is much softer. Tubes in *distinct layers* after the first year, the *white mouths quickly discolored* where handled and averaging 4 to 6 per mm. Spores ovoid, apparently *echinulate or punctate, truncate at apex, brown,* 6-9 x 4.5-6 u. Setae

none. Hyphae 2-6 u, branched and tapering to whip-like extremities, non-septate. Extremely common on logs, stumps and extensive dead areas in trees of hardwood species; rarely on coniferous species.

Fomes conchatus (Pers.) Gill. A *small species* often of *semi-resupinate* habit, with *thin, applanate, conchiform* pileus with a furrowed and *tomentose* brown surface and indistinctly stratified tubes with brown mouths averaging 5 to 7 per mm. Spores subglobose, hyaline, *4-5 x 3.5-4.5 u.* Setae projecting to about 20 u, 6-9 u diameter. Hyphae simple, aseptate, 2.5-4 u. Rather common on dead wood of various deciduous trees, or on dead areas in living trees, especially of maple and ash. Compare *F. densus.*

Fomes Everhartii (Ellis & Gall.) von Schrenk. A medium-sized to large species with *hard and woody* but unincrusted convex to ungulate pileus that usually soon becomes *very rough, rimose* and *blackish.* Tubes indistinctly stratified, the pores 4 to 6 per mm. Spores subglobose, *brown,* 4-6 x 3.5-4.5 u. *Setae abundant,* projecting up to 20 u, 5-12 u diameter. Hyphae simple, somewhat septate, no clamps, 2-5 u. Rather common on living *trunks of oaks;* occasional on logs, and recorded on a few other hosts. Occasionally forms abortive black rimose knots on living trees. Compare *F. rimosus, F. robustus,* and *F. igniarius.*

Fomes fomentarius (L.) Gill. A *medium-sized* species with *typically ungulate* pileus covered *by a hard horny zonate crust* under which the brown context is of softer consistency. Tubes *unstratified* but typically *elongated to 3-5 cm.,* the pores averaging 3 to 4 per mm. Spores rarely found, cylindric, hyaline, 12-18 x 4-5 u. *Setae none.* Hyphae simple or nearly so, non-septate, mostly 5-10 u. Common in the mountains on dead wood of various hardwoods, especially maple, birch, and beech.

Fomes fulvus (Scop.) Gill. A *small* species, usually *semi-resupinate* with pileus usually *reflexed but 1-3 cm., plane or convex,* nearly glabrous, brown to blackish, unincrusted but hard and woody. Tubes indistinctly stratified, stuffed with white mycelium in age, the pores 5 to 7 per mm. Spores subglobose, *hyaline, 3.5-5 x 3-4.5 u.* Setae not projecting conspicuously, *6-8 u diameter.* Hyphae simple, *septate,* no clamps, 3-6 u diam. Occasional, on trunks or branches of *living species of wild plum.* Compare *F. igniarius.*

Fomes igniarius (L.) Gill. A medium-sized to rather large species with nearly plane to *ungulate furrowed* pileus, unincrusted but with a *hard, woody,* even, though often cracked, gray to blackish surface, a *hard* and *woody* context, indistinctly layered tubes that in age *become white-incrusted,* and pores 4 to 5 per mm. Spores globose, *hyaline,* 5-6.5 x 4-5 u. Basidia *5-7 u* diameter. Setae not projecting prominently, of *small size, 12-18 x 4-6 u.* Hyphae simple, aseptate, 3-5 u. Rare in most sections of the state; more common in the north tier of counties. On living deciduous trees, especially birch, beech, and maple. Compare *F. robustus* and *F. Everhartii.*

Var. laevigatus (Fries) Overh. Entirely resupinate or rarely slightly reflexed. Pores usually 5 to 7 per mm. Otherwise as in the species ex-

cept with spores *3.5-4.5 x 3-4 u,* and *basidia 4-5 u* diameter. Common, on logs and dead snags of various hardwoods, especially birch.

Fomes lobatus (Schw.) Cooke. A small or medium-sized, sometimes falsely stipitate species with a thin easily indented brown crust. Tubes never truly stratified but the sporophore perennial for a few years by producing new pilei from the base of the old, hence becoming somewhat imbricate. Pores 4 to 5 per mm. Spores as in *F. applanatus.* Setae none. Hyphae simple, non-septate, 3-7 u. Rare. On old logs and stumps of deciduous trees. Compare *F. applanatus.*

Fomes Pini (Thore) Lloyd. A medium-sized to large species, convex to ungulate, frequently furrowed, unincrusted, at first rough tomentose, becoming more glabrous and *rough, rimose* and *blackish* in age. Tubes not definitely stratified, the pores 2 to 3 per mm., *frequently quite daedaloid.* Spores globose, hyaline or pale brown, 4-6 x 3.5-5 u. Setae projecting somewhat, *reaching diameters of 10-15 u.* Hyphae simple, non-septate, 3-6 u. Frequent, on living trunks of *coniferous* trees.

Var. Abietis Karst. *Thin and often effused-reflexed,* less evidently perennial, with a more conspicuous, zonate, and often *golden-brown tomentum,* more definitely conchiform in shape, but otherwise as in the species, except more frequently found on dead wood. Not common.

Fomes Ribis (Schum.) Cooke. A small or medium-sized woody species with thin and applanate, often imbricate, yellow-brown pileus that is at first rusty-tomentose but becomes more glabrous and blackish, zoned and sulcate, with a narrow black line separating the tomentum from context. Tubes indistinctly stratified, the pores 7 to 8 per mm. Spores ellipsoid to globose, pale rusty, 3-4 x 2.5 u. Setae none. Hyphae simple, occasionally septate, 2.5-5 u. Rare. At the base of living stems of gooseberries and currants; occasionally on other hosts as *Lonicera* and *Symphorocarpus.* Compare *F. conchatus.*

Fomes rimosus Berk. A medium-sized to *large or very large species, hard and woody,* brown and finely tomentose on the growing margin, *black and rimose* in old specimens, applanate to ungulate, unincrusted. Tubes somewhat stratified, the pores 4 to 6 per mm. Spores broadly ellipsoid to subglobose, *brown,* 4-6 u diameter. *Setae none.* Hyphae simple, non-septate, 4-7 u. Only on living trunks of black locust. Common.

Fomes robustus Karst. A medium-sized or *rather large* species, brown and finely tomentose on the growing margin, blackish and somewhat rimose in age, unincrusted, with tubes *very definitely stratified in many layers,* and pores 4 to 6 per mm. Context a *brighter yellow brown* than in other species. Spores globose, *hyaline, 6-8 u diameter. Setae none.* Hyphae simple, aseptate, 3-6 u. Frequent on living or recently killed trunks of *black birch;* on other living hosts, especially oaks, in other states southward. Compare *F. igniarius.*

Var. Tsugina (Murrill) comb. nov. (*Fomitiporia Tsugina* Murrill). Mostly or entirely resupinate but otherwise as in the species except growing on recently killed trunks of hemlock, usually at the junction of branch and trunk. Rather common in the mountains.

Fomes tenuis Karst. A *small* or very small sessile or *frequently entirely resupinate thin conchiform* species, brown-tomentose then *blackish-tomentose,* finally nearly glabrous, *zonate.* Context often *nearly obsolete.* Tubes occasionally in 2 or 3 layers, the pores 2 to 3 or 3 to 4 per mm. Spores *cylindric, hyaline, 5-7 x 1.5-2 u.* Setae *abundant, narrowly lance-shaped* and *typically projecting* 30-60 u, 5-9 u diam. Hyphae simple, aseptate, 2-4 u. Common in its entirely resupinate form (*Poria*); pileate condition rare. On dead wood of both deciduous and coniferous trees. Compare *F. Pini var. Abietis,* and *F. conchatus.*

GENUS TRAMETES Fries

This genus is the most unsatisfactory one of the family. It is based on no readily recognizable character. Essentially, as usually interpreted, the species most often referred to it are those with thickened and leathery sporophores which otherwise might be referred to the old genus *Polystictus.* The tubes, in other words, are in a layer that is homogeneous with the context tissue and this gives the opportunity for the development of tubes running up into the context to slightly unequal distances, so that the layer they form seems to be less distinct from the context than in the softer and fleshy species of *Polyporus.* This is an extremely unsatisfactory separation as witness the species that have been referred to it by some writers and barred from it by others. Probably the genus should not be recognized and its species referred to other genera. Most of them would be sought in *Polyporus* and I have so transferred a number of them, and in case of a number of others I have keyed them out in the key to the species of that genus. All of the species here treated are tough, leathery, or corky in texture, with cylindric hyaline spores and all lack setae and cystidia. However, these characters are not sufficiently diagnostic that the genus could be redefined along those lines.

Key to the Species

1. Context white or pallid, not darker than wood-color 4
   Context pinkish-brown or rosy brown ..... See *Fomes subroseus*
   Context rusty-brown to dark brown 2
2. Pileus conspicuously hirsute or hispid; usually on dead willow or aspen; spores 12-15 x 4-5 u ..... *T. hispida*
   Pileus tomentose to glabrous; on wood of coniferous trees; spores 8-12 x 3-5 u 3
3. Sporophore mostly resupinate; context soft, less than 1 mm. thick ..... *T. carbonaria*
   Sporophore sessile; context soft-corky, more than 1 mm. thick ..... *T. americana*
4. Pileus strongly fibrillose to hirsute; usually on willow and aspen ..... *T. Trogii*
   Pileus less conspicuously pubescent 5
5. Pileus 2 cm. or more thick, strongly convex; usually on willow; anise-scented when fresh ..... *T. suaveolens*
   Pileus less than 2 cm. thick, not strongly convex 6

6. Pileus uniformly tobacco-brown to dark brown or blackish 7
   Pileus of lighter color 9
7. Pileus less than 0.5 cm. thick 8
   Pileus more than 0.5 cm. thick ..... *T. serialis*
8. Growing only on hardwoods; with a narrow black line separating context from the short tomentose covering .....*T. mollis*
   Growing only on conifers; without such a black line *T. variiformis*
9. Pores either 1 mm. or more in diameter or daedaloid and irregular; usually on wood of conifers .....*T. heteromorpha*
   Pores smaller and more regular, measuring somewhat less than 1 mm.; usually on hardwoods 10
10. Context 1.5 mm. or less thick; context, pores, and pileus white or nearly so .....*T. sepium*
    Context 2-5 mm. or more thick; pileus, pores, and context wood-color 11
11. Pileus radiate-rugose and multizonate; producing a white rot of the wood .....See *Daedalea confragosa*
    Pileus not as above; producing a brown carbonizing rot of the wood .....*T. malicola*

Resume of Species

Trametes americana sp. nov. A small species sometimes thin and applanate but typically thicker and often triangular in section, at first finely and compactly tomentose but the tomentum soon wearing away or becoming agglutinated into a smooth seared surface or appearing fibrillose-striate under a lens, rusty yellow then becoming blackish and finally weathering to gray. Context dark rusty-brown, usually 0.5-2 cm. thick. Pore surface buff to rusty-yellow or dark brown, the tubes conspicuously gray within, the mouths circular to angular or radially elongate, 2 to 3 per mm. or 1 x 5 mm. in daedaloid forms; spores cylindric or cylindric-ellipsoid, hyaline 9-12 x 3-5 u. Setae none. Hyphae nearly simple or sparingly branched, non-septate except in a few of the hyaline hypnae and then with scattered clamps, 3-6 u diam. On dead wood of coniferous trees; not infrequent on structural timbers, bridge beams, etc. This is the fungus previously referred by American authors to *T. protracta* and *T. odorata,* and by some regarded as a form of *Lenzites saepiaria.*

Trametes carbonaria (Berk & Curt.) comb. nov. A thin flexible species, usually *entirely resupinate,* rarely sessile, compactly tomentose, *uniformly umber-brown color* without and within. *Context less than 1 mm. thick.* Pore surface gray to brown, the pores *1 to 2 per mm.* Spores cylindric, hyaline, 8-11 x 3-4 u. Setae none. Hyphae somewhat colored, simple, aseptate, 2.5-4 u. On *dead charred wood* of coniferous trees. Rare everywhere. Noted from New York but not yet collected here.

Trametes heteromorpha (Fries) Bres. A small species, typically semiresupinate and narrowly reflexed, *everywhere white,* thin, leathery, zoned and radiate-striate, nearly glabrous. Context 1-3 mm. thick.

Pores hexagonal and *1-2 mm. broad,* or *irregular, daedaloid* and *larger.* Spores cylindric, hyaline, 7-11 (-14) x 4-6 u. Setae none. Hyphae simple, aseptate, 4-7 u. Infrequent. On dead wood of *conifers* or rarely on hardwood. Compare *T. sepium.*

Trametes hispida Bagl. A medium-sized to rather large species with *hirsute to strigose brownish pubescence* and pale brown context. Pore surface brown to *blackish,* the pores 1 mm. diameter. Spores cylindric, 12-15 x 4-5 u, hyaline. Hyphae brown, simple, aseptate, 5-8 u diam. and others branched, hyaline, 3-5 u. Occasional, on dead wood of *willow* and occasionally aspen. Compare *T. Trogii.*

Trametes malicola Berk. & Curt. A *small thin, often partly resupinate* species of uniform pale wood-color or isabelline, nearly *glabrous,* azonate. Pores *1.5 to 2 per mm.* Spores cylindric, hyaline, 7-9 x 2.5-3.5 u. Hyphae simple, aseptate, 3-5 u. Frequent on dead wood of various deciduous trees, especially maple and hickory. Compare *T. sepium.*

Trametes mollis (Sommerf.) Fries. A very *small* and very *thin sessile* or *semiresupinate* species with *flexible* pileus, *tobacco-brown* or darker, and with *black* zones, with a *narrow black line* separating the very thin context from the velvety-tomentose covering. Pores 1 to 3 per mm. Hyphae simple or nearly so, hyaline to pale brown, 2-4 u. Rare. On wood of a variety of deciduous trees. Compare *T. variiformis.*

Trametes sepium Berk. A *very small* often semiresupinate species of uniform white or more often *pale wood-color,* usually *azonate* and *nearly glabrous* and with thin pallid context. Pores *1 to 2 per mm.* Spores cylindric, hyaline, 7-11 x 3-4.5 u. Hyphae nearly simple, with a few septations and clamps, 3-6 u. Occasional on dead wood of various hard woods; rare on conifers. Frequently on fence-posts. Compare *T. malicola.*

Trametes suaveolens (L.) Fries. A *medium-sized, rather thick* sessile, white or gray species with strongly convex and nearly glabrous pileus and white context *1-2 cm. thick.* Pores 1 to 3 per mm., *usually dark-colored.* Spores cylindric, hyaline, 7-11 x 3-4 u. Hyphae sparingly branched, aseptate, *mostly 6-12 u.* Occasional on dead or diseased willows; rarely on other species. Anise-scented when growing.

Trametes Trogii Berk. A small sessile or *semiresupinate* species with *dense ochraceous to tawny pubescence* that weathers to gray, and *nearly white* fibrous context. Pore surface whitish to isabelline, the pores *3 per mm.* Spores cylindric, hyaline, 8-10 x 2.5-3 u. Hyphae hyaline, simple or branched, 3-7 u., aseptate. Occasional, on dead wood of willow and aspen. Compare *T. hispida.*

T. variiformis Peck. A small, thin, semiresupinate species with flexible, zonate, cinnamon-brown or tawny-rufescent, fibrillose-tomentose pileus that finally becomes nearly glabrous, and white context less than 1 mm. thick. Pores usually irregular, 1 to 2 per mm. or more elongated. Spores hyaline, cylindric, 7-10 x 3 u; hyphae nearly simple, few or no septations and clamps, 2.5-4.5 u. Occasional, on dead wood of coniferous trees. Compare *T. mollis.*